Remarks

Reconsideration of the application is respectfully requested. Claim 3 was rejected under Section 112 as being indefinite. Claim 3 has now been amended and should be in full conformance.

No new matter has been added to the existing or new claims.

Claims 1 and 5-10 were rejected under Section 103 as being obvious over Cheriton in view of Epps. This rejection is respectfully traversed.

To summarize the present invention, it is a physical topology containing real nodes as opposed to merely software algorithms and imaginary data-structures. An important feature of the present invention is that port numbers are gradually and constructively added to the nibbles as packets move in an ingress direction between physically distant nodes. Another important feature is that port numbers of previous nodes are also stored in the nibbles so there is no need to use look-up table commonly used in MPLS systems. The port numbers in the nibbles are gradually removed from the nibbles as the packets move in an opposite egress direction. As best shown in Fig. 11, when a packet travels in the ingress direction, a port number, at which the packet arrived, is added to the rightmost nibble (as described in paragraphs [0062-0063] of the current published application 2006/0015643). When the packet arrives to the next node, the

port number at which the packet arrived is added to the next nibble of the packet adjacent to the port number of the previous node. This adding of port numbers to the nibbles of the tags continues as the packet moves through the physical topology in the ingress direction. The process is opposite when the packet moves in the egress direction, as described in Fig. 12 and paragraphs [0064-0065]. More particularly, when a packet arrives at a node in the egress direction, the port number of the first nibble is first read and then removed before the packet is sent to the next node via the port number. The removal of port numbers in the nibbles continues until the packet arrives at the destination.

Cheriton merely discloses an extension to an algorithm and data structure (TRIE) (not physical nodes) used to more effectively carry out forwarding table look-ups (e.g., for IPv4 or MPLS look-ups) to decide, based on information in a received packet, which port to use for the packet. In other words, Cheriton's data structure resides inside the memory of a computer and does not deal with a physical topology that has physical ports and physically distant nodes. The computation of the best route to a destination/port all takes place in the computer memory.

More particularly, Fig. 1 shows a packet 121/122 going via input 131 through switching-device 130 (in which the data-structure 200 is shown in detail in Fig. 2) and out via output interface 134 to the destination 140. With reference

to Fig. 2, it should be noted that there are no packets sent from the root node 205 via line 1 to the inferior node 210 and via line 256 to node 215 since Fig. 2 merely depicts an imaginary data structure (col. 2, line 64) within a switching device 130 (see Fig. 1) to organize information within the device 130.

The Examiner correctly states that Cheriton does not teach the second node adding a tag with a first port number to the first packet and adding a first port number of the first access port of the first node to the tag. However, Cheriton also fails to teach or suggest:

1) A physical topology having a first node and a second node with an uplink connected to a router;

2) Sending a packet via the first access port (having a third port number) to the second node and the second node adding the third port number of the first access port of the second node to the first nibble field of the packet;

3) Sending the packet from the second node to the first node via the first access port (having a first port number), the first node adding the first port number to the first or second nibble adjacent to the third port number; and.

4) The first node sending the packet via a first uplink to the router.

Epps does not cure these deficiencies. Epps merely teaches an architecture for a line-card to more effectively do IPv4, IPv6 or MPLS forwarding look-ups in tables. Epps

calculates where the tag is in the packet. Once the tag is found the tag value is concatenated with the remainder of the packet. The concatenated tag value may then, in a later computation step, be used as a key for the look-up table. Epps basically teaches a method for how to implement IPv4, IPv6 and MPLS forwarding. Paragraph [0281] and other paragraphs explain that a tag swap operation takes place. Paragraph [0063] specifies that MPLS switching may be used together with Epps unique line-card. A person of ordinary skill in the art knows that in MPLS or tag switching the entire tag is replaced (swapped) at each node hop so that a new tag is added, according to the look-up table, to the packet prior to sending it, via the designated port, to the next node. In other words, the entire tag is replaced with a new tag before the packet is sent.

Epps also fails to teach or suggest the gradual building up and removal of port numbers in nibbles, as in the present invention. Also, the gradual building up and removal of port numbers in the nibbles, according to the present invention, eliminate the need for a look-up table.

It is submitted that Epps fails to teach or suggest:

1) A physical topology having a first node and a second node with an uplink connected to a router;

2) Sending a packet via the first access port (having a third port number) to the second node and the second node adding the third port number of the first access port of the second node

to the first nibble field of the packet;

3) Sending the packet from the second node to the first node via the first access port (having a first port number), the first node adding the first port number to the first or second nibble adjacent to the third port number; and

4) The first node sending the packet via a first uplink to the router.

Even if Cheriton is combined with Epps, although this is not taught or suggested, all of the limitations of the amended claim 1 are not satisfied. As indicated in the four items above, the references still fail to teach or suggest the unique adding of port numbers to the nibbles and keeping the previous port numbers in the tags as the packet moves between nodes, as specified in the amended claim 1.

Applicant fails to understand why a person of ordinary skill in the art would look to Cheriton and Epps to learn about adding the port numbers to the nibbles and keeping the previous port numbers added to the nibbles so as to create forwarding information (corresponding to the information present in an MPLS forwarding table) within the tag when these features are completely missing in the cited references. It is submitted that both Cheriton and Epps would require extensive modification that is not taught or suggested to meet the limitations of the amended claim 1.

In view thereof, it is submitted that the amended claim 1 is allowable over the cited references.

Claims 5-10 are submitted to be allowable because they depend upon the allowable base claim 1 and because each claim includes limitations that are not taught or suggested in the cited references.

Claims 2-4 and 11 were rejected under Section 103 as being obvious over Cheriton in view of Epps and further in view of Kimball. This rejection is respectfully traversed.

Claims 2-4 and 11 are submitted to be allowable because they depend upon the allowable base claim 1 and because each claim includes limitations that are not taught or suggested in the cited references.

New claims 12-13 are submitted to be allowable over the cited references for reasons similar to the reasons for the allowability of the amended claim 1.

It is submitted that none of the cited references teaches or suggests the gradual reading of the port number in the nibble of an incoming packet (in the egress direction) and removing the port number (at which the packet arrived) from the nibble before sending the packet to the next node which removes the port number from the corresponding nibble of the tag of the incoming packet. The cited references completely fail to teach or suggest these features.

It is therefore submitted that the new claims 12-13 are also allowable over the cited references.

In view of the above, the application is now submitted to be in condition for allowance, and such action is respectfully requested.

Respectfully submitted,

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